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09/619,279	07/19/2000	Ikuo Nakano	49975(904)	2217

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EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 11/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/619,279

Applicant(s)

NAKANO, IKUO

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18, 19 and 22-27 is/are allowed.
- 6) ☐ Claim(s) 1-17, 20, 21 and 28-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 15.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 16 should be designated by a legend such as –Prior Art– because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informality. On page 12, line 5, the examiner suggests inserting –16– after “element”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-15 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Lines 4-5 of claim 10 imply a structure that is not claimed by specifying light as inclination detection light. In addition, "assuming" on line 4 of claim 10 is vague and indefinite. The examiner will interpret a receiving side for light as a front side.

Claim 13 recites the limitation "said reflecting part" in line 2. There is insufficient antecedent basis for this limitation in the claim. The examiner will interpret the claim by replacing "said reflecting part" with -a reflecting part-.

On lines 5-6 of claim 17, the meaning of "disposed at a second and later from said front side" is unclear. The examiner will interpret lines 4-6 of claim 17 as meaning that the said reflecting part is formed at the circumference of at least one of the lenses.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Jeon (US 5,742,383).

Jeon discloses a lens comprising a plane surface whose normal direction virtually conforms to an optical axis direction (Fig. 2, elements 10 and 12), said plane surface being provided with a reflecting part for reflecting only light within a predetermined waveband (Col. 3, lines 46-54). The examiner notes that the filter (Fig. 2, element 31) transmits only light of a predetermined

wavelength; thus the reflecting part is provided to reflect only light within a predetermined waveband.

6. Claims 10 and 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Shoji et al (hereafter Shoji) (US 6,057,969).

In regard to claim 10, Shoji discloses an optical pickup device comprising a plurality of lenses disposed in an optical axis direction with predetermined intervals, assuming that a receiving side for inclination detection light is a front side, each said lens being provided with a plane surface on a front-facing surface thereof in a virtually perpendicular direction to an optical axis, a plurality of said lenses each being larger in diameter than a preceding lens (Fig. 1, elements 10 and 13 and Col. 3, lines 55-64). Front surface (Fig. 1, element 13a) is a plane surface in a virtually perpendicular direction to an optical axis and is specified as being a front side for receiving inclination detection light. Lens 10 of Fig. 1 has a plane surface on the outer circumference and is larger in diameter than the preceding lens 13.

In regard to claim 16, Shoji discloses an optical pickup device, which emits a light beam condensed by combined lenses to an optical recording medium, wherein a plurality of lenses constituting the combined lenses each have a plane surface on a surface thereof, that faces an optical recording medium at a circumference of said lens, said plane surface having a normal direction virtually conforming to an optical axis, a reflecting part is formed on at least said plane surface of one or more of a plurality of said lenses, said reflecting part increasing reflectivity of at least specific light received from the optical recording medium, and assuming that a side facing the optical recording medium is a front side, each said lens is larger in outer diameter than a preceding lens (Fig. 1, elements 10 and 13). The examiner notes that the optical recording medium located on the side of the lens barrel opposite element S is inherent for use with the optical pickup device

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of Shoji. The examiner also notes that a reflecting part that increases reflectivity of at least specific light will increase reflectivity of at most any light and that the reflecting part of Shoji (Fig. 1, element 13a) reflects light specifically used for detecting inclination of the surface (Col. 3, lines 55-64).

In regard to claim 17, Shoji discloses that a front lens of said lenses is a planoconvex lens including a plane surface at a front and a convex surface at a rear, and said reflecting part is formed at the circumference of at least one of the lenses (Fig. 1, element 13).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 9, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda et al (hereafter Okuda) (US 5,883,709) in view of Katayama (US 5,875,167).

In regard to claim 1, Okuda discloses a lens comprising: a curved surface having a function as a lens (Figs. 5-6, element 2), a plane surface disposed in a virtually perpendicular direction to an optical axis (Figs. 5-6, element 3), and a reflecting part which is disposed on said plane surface and reflects light within a predetermined waveband with reflectivity higher than said curved surface (Figs. 5-6, element 3 and Col. 6, lines 3-6). Okuda does not disclose that the reflecting part transmits light outside the waveband.

Katayama discloses a reflecting part which is disposed on a plane surface, reflects light within a predetermined waveband with reflectivity higher than the surface inside the reflecting part on the plane surface, and transmits light outside the waveband (Col. 16, lines 57-62 and Figs. 17A and 17B, elements 43-44 and 46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the reflecting part that transmits light outside the predetermined waveband into the lens of Okuda as suggested by Katayama, the motivation being to provide a numerical aperture for the light outside the waveband large enough to provide a light beam of the correct size for the optical information medium that is read from and/or written to with the light outside the predetermined waveband as taught by Katayama (Col. 17, lines 1-8).

In regard to claim 2, Okuda discloses that reflecting part is formed so as to cover said plane surface and said curved surface (Fig. 6).

In regard to claim 3, Katayama discloses that the reflecting part includes at least one dielectric film (Figs. 17A and 17B, element 44).

In regard to claim 4, Katayama discloses that the reflecting part includes an SiO₂ film (Figs. 17A and 17B, element 43).

In regard to claim 9, Okuda in view of Katayama discloses an optical pickup device comprising a lens including: a curved surface having a function as a lens, a plane surface disposed in a virtually perpendicular direction to an optical axis, a reflecting part which is disposed on said plane surface, reflects light within a predetermined waveband with reflectivity higher than said curved surface, and transmits light outside the waveband (see claim 1).

In regard to claim 20, Okuda discloses the method for detecting lens inclination, said lens including: a curved surface having a function as a lens, a plane surface disposed in a virtually

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perpendicular direction to an optical axis, and a reflecting part which is disposed on said plane surface, reflects light within a waveband with reflectivity higher than said curved surface, and transmits light outside the waveband (see claim 1), said method comprising: a step 'a' of emitting light for detecting inclination to said lens (Fig. 5); and a step 'b' of detecting a position of a condensing spot formed by light reflected from said reflecting part (Figs. 5 and 8).

In regard to claim 21, Okuda discloses that in the step 'a', the light for detecting inclination is not emitted to the curved surface but only to the plane surface and the reflecting surface (Fig. 1).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda in view of Katayama as applied to claim 1 and in further view of Imai (US 5,283,600).

Okuda in view of Katayama discloses the lens as claimed in claim 1 that includes a reflecting part. Okuda in view of Katayama does not disclose that the reflecting part includes an aluminum film and a dielectric film which is provided thereon.

Imai discloses a dielectric film on an aluminum film and teaches that applying the dielectric film on top of the aluminum film will increase reflectance.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a dielectric film stacked on the aluminum film in the lens of Okuda in view of Katayama as suggested by Imai, the motivation being to increase reflectance from the reflecting part of the lens.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Okuda.

Jeon discloses the lens as claimed in claim 6. Furthermore, Jeon discloses that the plane surface is formed at a circumference of the lens, that the reflecting part is formed on the plane surface, and lens functioning section acting as a lens at the inner radius of the plane surface. Jeon

does not disclose that the reflecting part is formed on the surface of the lens functioning section as well as on the plane surface.

Okuda discloses a plane surface that is formed at a circumference of a lens (Figs. 5-6, element 3), a lens functioning section acting as a lens at an inner radius of said plane surface (Figs. 5-6, element 2), and a reflecting part that is formed on a surface of a lens functioning section as well as on said plane surface (Figs. 6). Okuda teaches that size of the image produced by emitting light to the entire area of the lens will be small enough for accurate detection of lens inclination and the problem of inaccurate detection of lens inclination due to the wide beam spot produced from the reflection of light off of a small part of the microscopically uneven reflecting part of the lens shown in Fig. 1 can be overcome (Col. 2, lines 17-24; Col. 3, lines 32-35; and Col. 7, lines 34-38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the reflecting part on the surface of the lens functioning section as well as on the plane surface of Jeon as suggested by Okuda, the motivation being to accurately detect the inclination of the lens by producing a sufficiently small image from the light reflected from the lens.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al (hereafter Nomura) (US 5,995,304) in view of Imai.

Nomura discloses a lens comprising a plane surface whose normal direction virtually conforms to an optical axis direction (Fig. 2, element 4 and Col. 2, lines 1-3), said plane surface being provided with a reflecting part composed of an aluminum film (Col. 3, lines 62-63).

Nomura does not disclose that a dielectric film is stacked on the aluminum film on the plane surface.

Imai discloses a dielectric film on an aluminum film and teaches that applying the dielectric film on top of the aluminum film will increase reflectance.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a dielectric film stacked on the aluminum film in the lens of Nomura as suggested by Imai, the motivation being to increase reflectance from the reflecting part on the plane of the lens.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji in view of Nomura.

Shoji discloses an optical pickup device as claimed in claim 10, wherein each said lens includes a curved surface having a function as a lens (Fig. 1, elements 10 and 13) and a lens including a reflecting part on said plane surface (Fig. 1, element 13 and 13a). Shoji does not disclose that said reflecting part reflects light within a predetermined waveband with reflectivity higher than said curved surface.

Nomura discloses a lens that includes curved surface having a function as a lens and a reflecting part on a plane surface, wherein said reflecting part reflects light within a predetermined waveband with reflectivity higher than said curved surface (Fig. 2, elements 1-4 and Col. 4, lines 9-13). The examiner notes that the reflecting part reflects light of any wavelength with reflectivity higher than the curved surface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the lens of Shoji (Fig. 1, element 13) with the lens of Nomura, the motivation being that the lens of Nomura will allow more light through the curved surface than the lens of Shoji, while still reflecting light to detect the inclination of the lens.

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12. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji in view of Jeon.

In regard to claim 28, Shoji discloses a method for detecting lens inclination, that detects inclination of combined lenses including a plurality of lenses, each having a plane surface at least at a circumference thereof, said plane surface having a normal direction virtually conforming to an optical axis direction, said method comprising the steps of emitting light to said combined lenses and detecting inclination of said combined lenses based on light reflected therefrom (Fig. 1, elements 10 and 13 and Col. 3, lines 55-64). The examiner notes that lens (Fig. 1, element 10) has a plane surface at the circumference thereof and that the plane surface has a normal direction virtually conforming to an optical axis direction. Shoji does not specifically disclose that the light emitted to the combined lenses is parallel light.

Jeon discloses a method of detecting lens inclination comprising the steps of emitting light to a plurality of lenses and detecting inclination of the plurality of lenses based on light reflected therefrom (Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use parallel light in the method for detecting lens inclination of Shoji as suggested by Jeon, the motivation being to make the optical system easier to design because the distance that collimated light travels from one optical element to another does not have to be considered in the design.

In regard to claim 29, Shoji in view of Jeon discloses that a reflecting part for increasing reflectivity of the parallel light of Jeon is formed on said plane surface of at least one of said lenses included in said combined lenses, and inclination of said combined lenses is detected based on light reflected from said reflecting part (Shoji Fig. 1, elements 13 and 13a and Col. 3, lines 55-64).

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13. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Ichiura et al (hereafter Ichiura) (US 5,708,635).

Jeon discloses a method for detecting lens inclination, in which parallel light is emitted to a lens and inclination of the lens is detected based on light reflected therefrom, said lens including a plane surface at least at a circumference thereof and a lens functioning section acting as a lens at an inner radius of said plane surface, said plane surface having a normal direction virtually conforming to an optical axis direction. Jeon does not disclose preventing parallel light from entering a lens functioning section by using a light-shielding member.

Ichiura discloses preventing parallel light from entering a lens functioning section by using a light-shielding member and teaches that shielding parallel light from entering a lens functioning section will generate ultra-resolution and lessen the size of the beam spot (Fig. 8, elements 52-53 and Col. 1, lines 40-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the step of preventing parallel light from entering a lens functioning section by using a light-shielding member in the method for detecting lens inclination of Jeon as suggested by Ichiura, the motivation being to generate ultra-resolution and lessen the size of the beam spot.

Citation of Relevant Prior Art

14. Ai et al discloses a lens having a curved surface and a plane surface perpendicular to the direction of the optical axis having the function of wavelength filter (Fig. 5A and Col. 3, lines 48-56). Baba (US 5,768,227) and Suzuki (US 5,276,663) disclose optical pickup devices using lens barrels.

Allowable Subject Matter

15. Claims 18-19 and 22-27 are allowed.

In regard to claim 18, none of the references alone or in combination disclose or suggest an optical pickup device comprising a plurality of lenses each having a reflecting part on a plane surface facing an optical recording medium, wherein each reflecting part reflects light of a different waveband.

In regard to claim 19, none of the references alone or in combination disclose or suggest an optical pickup device comprising a plurality of lenses each having a plane surface facing an optical recording medium and a reflecting part formed on at least one plane surface such that each of the lenses receive an equal quantity of light reflected from an optical medium when parallel light is emitted to the plurality of lenses.

In regard to claim 22, none of the references alone or in combination disclose or suggest a method for detecting lens inclination comprising: a step of emitting light for detecting inclination to the plane surfaces of a plurality of lenses and a step of detecting a position of a condensing spot formed by light reflected from said plane surface of each said lens.

16. Claims 12-15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

In regard to claim 12, none of the references alone or in combination disclose or suggest an optical pickup device comprising a plurality of lenses each having a reflecting part on a plane surface disposed on a side for receiving light, wherein the wavelength reflected from the reflecting part differs for each lens.

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In regard to claim 13, none of the references alone or in combination disclose or suggest an optical pickup device comprising a plurality of lenses wherein a reflecting part is formed on a lens such that each light receives an equal amount of reflected light for detecting inclination.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Michael Battaglia



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